Claims

[c1] 1.A brush seal, disposed in a section of a steam turbine, for reducing leakage of a working fluid across a pressure drop, said brush seal comprising:
a bristle holder attachable to said steam turbine; and
a plurality of bristles coupled to said bristle holder, said plurality of bristles comprising Ni, Cr, Mo, Fe, W, Mn, V, Si, and C.

[c2] 2.The brush seal of claim 1, wherein an energy source of said steam turbine is selected from the group consisting essentially of nuclear plants, fossil-fuel plants and combined cycle plants.

[c3] 3.The brush seal of claim 1, wherein each of said plurality of bristles comprises about 16% Cr, about 16% Mo, about 5% Fe, about 4% W, less than about 2.5% Co, about 1% Mn, about 0.35% V, about 0.08 Si, about 0.01% C and a remainder of Ni.

[c4] 4.The brush seal of claim 1, wherein the operating temperature of said section is in the range between about 100 ° F and about 500 ° F.

[c5] 5.The brush seal of claim 1, wherein the operating pressure of said section is up to about 160psia.

[c6] 6.A brush seal, disposed in a section of a steam turbine, for reducing leakage of a working fluid across a pressure drop, said brush seal comprising:
a bristle holder attachable to said steam turbine; and
a plurality of bristles coupled to said bristle holder, said plurality of bristles comprising a low radiation activation material, said material having less than 2.5% Cobalt by weight.

[c7] 7.The brush seal of claim 6, wherein an energy source of said steam turbine is selected from the group consisting essentially of nuclear plants, fossil-fuel plants and combined cycle plants.

[c8] 8.The brush seal of claim 6, wherein each of said plurality of bristles comprises about 16% Cr, about 16% Mo, about 5% Fe, about 4% W, about 1% Mn, about 0.35% V, about 0.08 Si, about 0.01% C and a remainder of Ni.

[c9] 9.The brush seal of claim 6, wherein the operating temperature of said section is in the range between about 100 ° F and about 500 ° F.

[c10] 10.The brush seal of claim 6, wherein the operating pressure of said section is up to about 160 psia.

[c11] 11.A steam turbine comprising:
a stator disposed in said steam turbine;
a rotor spaced apart from said stator so as to define a gap therebetween; and
a brush seal disposed in a section of said steam turbine, said brush seal comprising:
a)a bristle holder coupled to said stator; and
b)a plurality of bristles coupled to said bristle holder and wherein said plurality of bristles consists essentially of Ni, Cr, Mo, Fe, W, Co, Mn, V, Si, and C.

[c12] 12.The steam turbine of claim 11, wherein an energy source of said steam turbine is selected from the group consisting essentially of nuclear plants, fossil-fuel plants and combined cycle plants.

[c13] 13.The steam turbine of claim 11, wherein each of said plurality of bristles comprises about 16% Cr, about 16% Mo, about 5% Fe, about 4% W, less than about 2.5% Co, about 1% Mn, about 0.35% V, about 0.08 Si, about 0.01% C and a remainder of Ni.

[c14] 14.The steam turbine of claim 11, wherein the operating temperature of said section is in the range between about 100 ° F and about 500 ° F.

[c15] 15.The steam turbine of claim 11, wherein the operating pressure of said section is up to about 160 psia.

[c16]

16.A method of retrofitting a steam turbine comprising:
providing a stator; said stator disposed in said steam turbine;
providing a rotor, said rotor spaced apart from said stator so as to define a gap therebetween; and
providing a brush seal, said brush seal being disposable in a section of said steam turbine,

wherein said brush seal comprises a plurality of bristles having about 16% Cr, about 16% Mo, about 5% Fe, about 4% W, less than about 2.5% Co, about 1% Mn, about 0.35% V, about 0.08 Si, about 0.01% C and a remainder of Ni.

[c17] 17.The method of claim 16, further comprising operating said section of said steam turbine at a temperature in the range between about 100 ° F and about 500 ° F.

[c18] 18.The method of claim 16, further comprising operating said section of said steam turbine at a pressure up to about 160 psia.